2298 Vasilyev, S. P.

Sbornaya Konstruktsiya Tsepnogo Natyazhnogo Telezhechnogo Konveyera. (M.), 1954. 13s. s Ill. 24sm. (M-Vo Avtomob., Trakt. I s.-Kh. Mashinostroyeniya SSSR. Tsentr. Byuro Tekhn. Informatsii. Obmen Opytom V Mashinostroyenii. No. 34). 1.5000 EKZ. Bespl.- Avt. Ukazan V Kontse Teksta.- Beztit. L. I Obl. 621.867
(54-15019Zh)

VASIL'YEV, S.

[Remarks on the weather, crops and hunting in the vicinity of the Yakut village of Sottin] Primety of pogode, urozhae i okhote yakutov Sottinskogo naslega. Yakutsk, Gos.izd-vo YaASSR, 1945. 44 p. (MIRA 10:11)

(Yakutia--Description and travel)

BLANK, G.Ya., kand.ekon.nauk, dots.; VASIL'YEV, S.S., kand.ekon.nauk, dots.; LOKSHIN, R.A.; MOSTKOV, B.M., red.; TROFIMOV, A., tekhn.red.

[Procurements of agricultural products and row materials; mass feeding; baking; industrial interprises; cooperative automotive transportation and carting; general obscervations on the consumers' cooperative system] Zagotovki sel'skokhoziaistvennykh produktov i syr'ia; obshchestvennoe pitanie; khlebopechenie; proizovdstvennye predpriiatiia; avtomobil'nyi i guzhevoi transport potrebitel'skoi kooperatsii; kon"iunkturnye nabliudeniia v sisteme potrebitel'skoi kooperatsii. Moskva, Izd-vo TSentrosoiuza, 1957. 206 p. (Ekonomika i planirovanie sovetskoi kooperativnoi torgovli, no.4) (MIRA 11:3)
(Food industry) (Transportation)
(Cooperative societies)

VASIL'YEV, S.S.; KULIKOV, A.G.; SMOTRINA, N.A.; LYUDSKOV, B.P., red.; STARCHAKOVA, I.I., red.; SOKOLOVA, N.N., tekhn.red.

[Commodity stocks; Labor, personnel, and wages; Operating expenses in Soviet commerce; textbook for students in Soviet trade schools] Tovarnye fondy; Trud, kadry i zarabotnaia plata; Izderzhki obrashchcheniia v sovetskoi torgovle; posobie dlia uchashchikhsia tekhnikumov sovetskoi torgovli. No.2. Gos.izd-vo torg.lit-ry. 1958. 94 p. (MIRA 12:4)
(Commerce)

CHESUNOV, V.M., assistent; VASIL'YEV, S.S., doktor khimicheskikh nauk, prof.

Investigating the kinetics of evaporation of a polymer solution. Report No.2. Nauch.trudy MTILP no.23:49-61 '61. (MIRA 15:9)

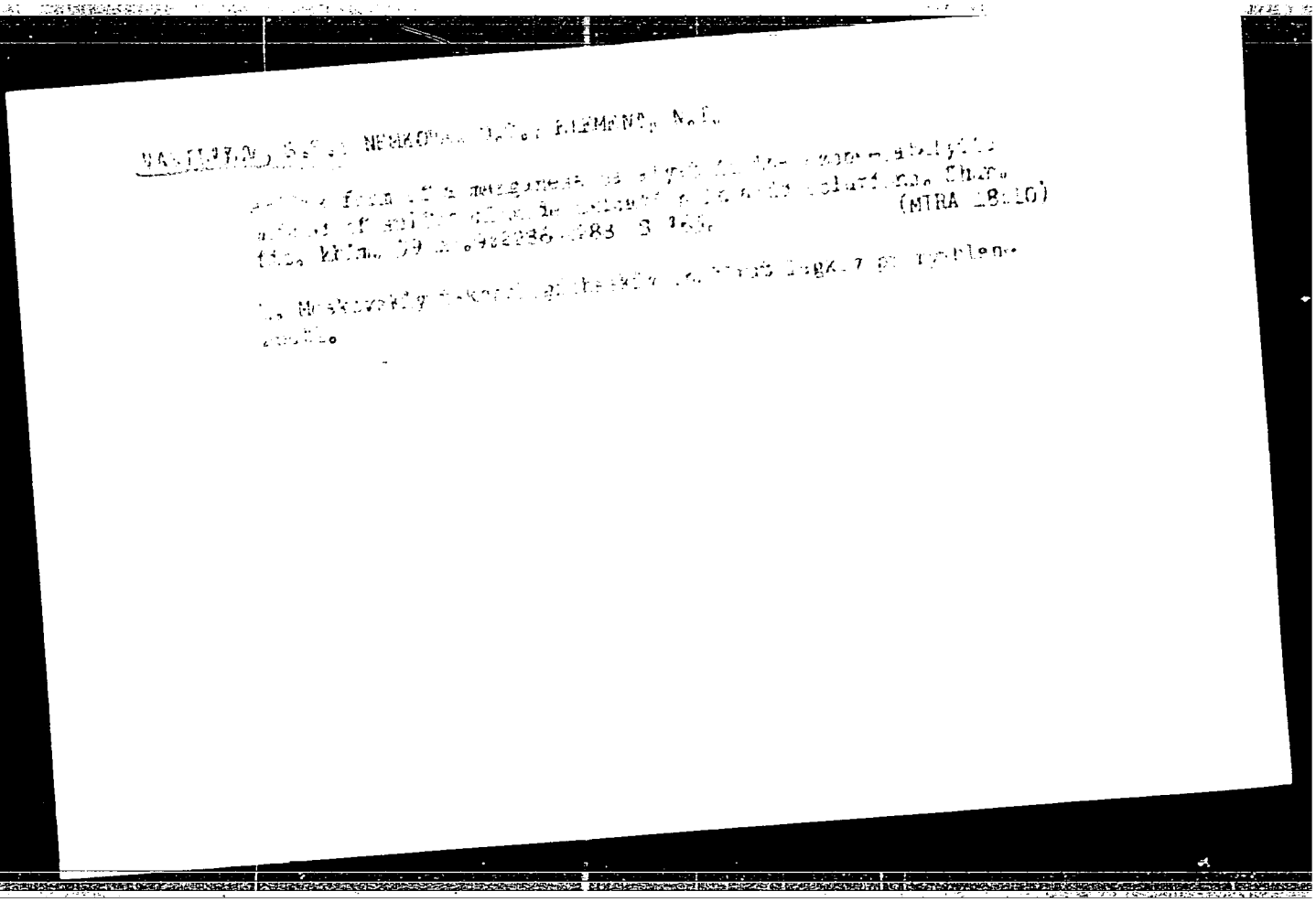
1. Kafedry neorganicheskoy i analiticheskoy khimii i fiziki Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti. (Polyamides) (Evaporation)

MENTSOV, V.S., kand. tekhn. nauk, dotsent; VASIL'YEV, B.S., doktor khimicheskikh nauk, prof.

Application of high-frequency currents in the cementing of soles. Nauch. trudy MTILP no.30:117-119 '64.

Kinetic analysis of the gluing of the materials for clothing and shoe manufacture by means of various adhesives. Report No.1. Ibid.:120-129 (MIRA 18:6)

1. Kafedra fiziki Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.



VASIL'YEV, S.S.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.

Absorption cross-section of 6.6 Mev. protons by F^{19} nuclei. Vest. Mosk.un.Ser.3:Fiz,astron. 17 no.4:93 Jl-Ag '62. (MIRA 15:9)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta. (Protons) (Fluorine)

VASIL'YEV, S.S.; ROMANOVSKIY, Ye.A.; TIMUSHEV. G.F.

Inelastic scattering of 6.6 Mev. protons on nickel and copper nuclei. Izv. AN SSSR. Ser. fiz. 26 no.9:1143-1149 S '62. (MIRA 15:9)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonsova.
(Protons--Scattering) (Nickel--Isotopes)
(Copper--Isotopes)

L 11017-65 EWT(m) DIAAP/SSD/AFWL/ESD(gs)

ACCESSION NR: AP4046439 S/0056/64/047/003/1164/1167

AUTHORS: Vasil'yev, S. S.; Dzhorzh, E. T.; Shavtvalov, L. Ya. /6/

TITLE: Investigation of Beta+ spectra of Ne^{19}, Ge^{67}, and Sb^{118}, and of Gamma radiation produced by bombarding Au-197 with Alpha particles

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 3, 1964, 1164-1167

TOPIC TAGS: neon, germanium, antimony, gold, beta spectrum, gamma radiation, alpha particle scattering

ABSTRACT: The apparatus and the procedure used for the investigations were described elsewhere (Vasil'yev et al., Izv. AN SSSR ser. fiz. v. 22, 7, 1958 and v. 26, 1495, 1962; ZhETF v. 36, 317, 1959, [illegible] 1960 and [illegible] 1963). The end-point energies obtained for the [illegible] spectra [illegible] and Sb^{118} were 2.2 ± 0.2

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L 11017-65
ACCESSION NR: AP4046439

MeV, 2.96 ± 0.05 MeV, and a set of partial-spectrum end points 700 keV (5.3%), 2200 keV (53.7%), 3000 keV (25.4%) and 4000 keV (15.6%). The corresponding half-lives were 16.5 ± 1 sec, 21 ± 1 min, and, in the case of Sb, 3.7 ± 0.3 min for the positron energies 316 and 2000 keV, and 4.3 ± 0.2 min for a positron energy 3152 keV. The data are compared with the results by others. The γ radiation arising in the bombardment of gold by α particles was investigated and the resultant conversion spectrum is shown in Fig. 1 of the enclosure.

"We thank Yu. A. Vorob'yev, V. S. Zazulin, N. S. Kirpichev, V. I. Plesskaya, V. M. Makuni, and T. N. Trapeznikova for assistance in this work." Orig. art. has: 2 figures and 1 formula.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Nuclear Physics Institute, Moscow State University)

ENCL: 01

L 11017-65
ACCESSION NR: AP4046439

ENCLOSURE: 01

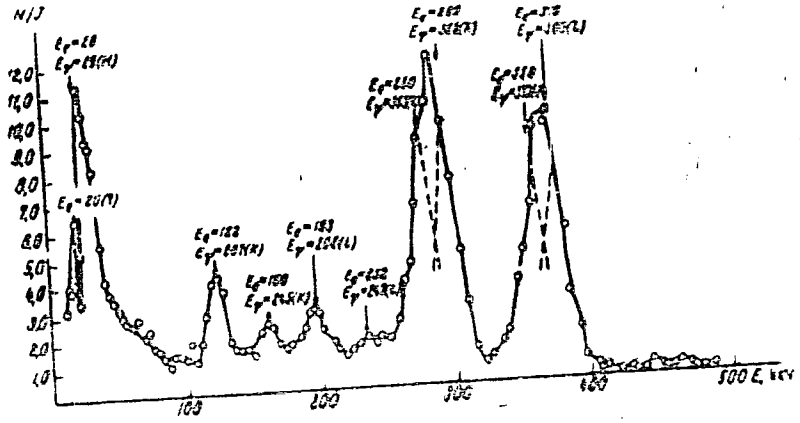

Fig. 1. Conversion spectrum of Au^{197} bombarded with alpha particles

Card 3/3

L 14293-65 EWA(h)/EWT(m) BSD/SSD/AFWL/ASD(a)-5/AS(mp)-2/ESD(t)
ACCESSION NR: AP4047928 S/0056/64/047/004/1585/1587

AUTHORS: Vasil'yev, S. S.; Mikhaleva, T. N.; Chuprunov, D. L. 19

TITLE: Investigation of the (p, p') reaction at levels 1.65 and 1.83 MeV in Al-27

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 4, 1964, 1585-1587

TOPIC TAGS: proton reaction, aluminum, magnesium, proton scattering, inelastic scattering, angular distribution, excitation spectrum, energy level

ABSTRACT: The reaction Al^{27} (p, p') was investigated with excitation of the 1.65 and 1.83 MeV levels. The protons were accelerated in the 120 cm cyclotron of the NIIYaF MGU. The measurements were made with apparatus described by the authors elsewhere (Izv. AN SSSR, in press), where the method of analyzing the experimental data was also

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described. A target 0.988 mg/cm^2 was prepared from an aluminum foil rolled from a crystal 99.9% pure or better. The protons scattered by the target were recorded by a multichannel scintillation spectrometer. The spectrum of the protons inelastically scattered by the Al^{27} disclosed intermediate small peaks due to the protons scattered with the excitation of the 1.65 and 1.83 MeV levels. The angular distributions for these groups were measured at several values of the incident proton energy between 6.15 and 6.17 MeV. These angular distributions were found to be sharply asymmetrical about 90° in the c.m.s., and to maintain the same shape for all incident proton energies. All are well described by the square of the spherical Bessel function of zero order. A study of the excitation function and of the excitation cross sections of the investigated levels, together with the experimental data and the analysis, indicate a direct mechanism for the Al^{27} (p, p') reaction, with these levels having a quantum number $5/2^+$. The level scheme deduced from these data for Al^{27} is shown in Fig. 1 of the enclosure.

L 14303-65
ACCESSION NR: AP4047928

"The authors thank Chief Engineer Yu. A. Vorob'yev and technician I. I. Ageyev for assistance in the work, and the cyclotron crew for satisfactory operation." Orig. art. has: 4 figures.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Nuclear Physics Institute, Moscow State University)

SUBMITTED: 07May64 ENCL: 01

SUB CODE: NP NR REF SOV: 003 OTHER: 004

Card 3/4

L 14303-65

ACCESSION NR: AP4047928

ENCLOSURE: 01

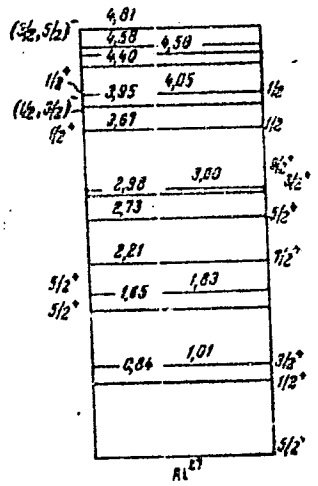

Fig. 1. Level scheme of excited states of Al^{27} with their characteristics as obtained by others (right) and in the present work (left)

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S/0076/64/038/002/0361/0367

ACCESSION NR: AP4019520

AUTHOR: Vasil'yev, S. S. (Moscow); Selivokhina, M. S. (Moscow)

TITLE: Relationship between the kinetics of nitrogen oxidation by electricity and the volt-ampere characteristic of the electric discharge

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 2, 1964, 361-367

TOPIC TAGS: nitrogen electric oxidation, nitrogen, nitrogen oxidation, nitrogen oxidation kinetics, NO

ABSTRACT: Using theoretical premises expressed earlier (Zh. F. Kh. 24, 1107, 1950; 26, 1577, 1952; 35, 761, 1961) and experimental methods worked out by the author, the purpose of the present work was to describe the elementary processes determining the synthesis of NO and the voltampere characteristic of the discharge. The study is based on the determination of the kinetic constants of NO formation by current of different force and on the calorimetric measurement of the discharge energy. The peculiarities of nitrogen electro-oxidation kinetics at different forces of current and the "reduced" voltampere characteristic can be explained by

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ACCESSION NR: AP4019520

the concept of metastable nitrogen molecules being additionally excited to higher energy levels, resulting in an increased oxidation rate. On the other hand, these molecules can release their energy to slower electrons. This leads to a relative lowering of the potential and of the discharge energy. The relationship between r_o (nitrogen oxidation rate constant) and i (current force of discharge) or U, W (discharge energy) is expressed by nonlinear functions. Orig. art. has: 3 figures, 12 formulas, 2 tables.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti (Moscow Engineering Institute for Light Industry)

SUBMITTED: 26Jan63 DATE ACQ: 31Mar64 ENCL: 00

SUB CODE: CH NO REF SOV: 009 OTHER: 002

Card 2/2

ACCESSION NR: AP4043804 S/0188/64/000/004/0088/0089

AUTHOR: Vasil'yev, S. S., Mikhaleva, T. N., Chuprunov, D. L.

TITLE: Differential cross sections of the Al sup 27 (p, p') Al sup 27* reaction for levels 7-13 when E sub p = 6.56 Mev

SOURCE: Moscow. Universitet. Vestnik. Seriya 3. Fizika, astronomiya, no. 4, 1964, 88-89

TOPIC TAGS: aluminum, proton, proton scattering, proton scattering cross section, cyclotron

ABSTRACT: The differential cross sections of inelastic scattering of protons with energies of 6.6 Mev on aluminum with excitation of the five lower levels have already been determined (S. S. Vasil'yev, Ye. A. Romanovskiy and G. F. Timushev, ZhETF, 40, 972, 1961). In this new study the authors have investigated inelastic scattering of protons on Al^{27} with excitation of levels lying above those investigated earlier, that is, above 3 Mev. The level V + VI is a doublet (-Q = 2976 and -Q = 3000 Kev); the levels 7-13 were therefore investigated. The protons were accelerated to an energy of 6.56 Mev in the 120-cm cyclotron of the NIIYaF MGU. The target, of crystalline aluminum

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ACCESSION NR: AP4043804

(purity 99.9%), was at the center of a scattering chamber with a diameter of 1.5 m. The energy spectra of the scattered protons were measured with a multichannel scintillation spectrometer. The sensing element, consisting of a photomultiplier and a CsI(T1) crystal, was located inside the scattering chamber. For changing the angle of observation of the scattered protons from 30 to 150° the sensing element was moved around the target by remote control without cutting off the beam of protons. The partial differential cross sections were determined from the ratio of the areas of the corresponding maxima in the energy spectra of inelastically scattered protons to the area of the maximum corresponding to elastically scattered protons; data on the differential cross section of elastic scattering of protons on aluminum from the above-cited study were also used. A table in the text gives the measured differential cross sections in millibarns/sterad for inelastic scattering. The error in measurements did not exceed 20%. "The authors wish to thank the crew servicing the cyclotron, headed by Yu. A. Vorob'yev, engineer V. S. Zazulin and V. I. Titov." Orig. art. has: 1 table.

ASSOCIATION: NIIYaF, MGU

SUBMITTED: 22Jan64 ENCL: 00

SUB CODE: NP NO REF SOV: 001 OTHER: 001

Card 2/2

VASIL'YEV, S.S.

120-5-7/35

AUTHORS: Akishin, A.I., Vasil'yev, S.S. and Mikhaleva, T.N.

TITLE: A Two-channel Electron Multiplier with a Plane Cathode (Dvukhkanal'nyy elektronnyy umnozhitel' s plenochnym katodom)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No. 5, pp. 36-38 (USSR)

ABSTRACT: It is sometimes necessary in nuclear studies to record ions having a small range in a material in the presence of an intense background of scattered quanta and high energy ions. In such cases, it is difficult to use ordinary single-channel electron multipliers since the pulse heights due to slow ions and the scattered radiations are comparable. It is not always possible to discriminate against the background without an appreciable loss in the slow ion counting efficiency. In such cases, it is possible to use a two-channel electron multiplier with a plane cathode (Ref.1). The present paper describes the construction and some characteristics of such multipliers. Each channel consists of 15 stages and an anode. The form and position of the stages is similar to that described by Allen (Ref.2). The form of the cathode is such as to focus the electrons from both of its sides onto the first stages. Corresponding stages in the two channels are electrically

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A Two-channel Electron Multiplier with a Plane Cathode.

function of interstage voltage. Curves 1 and 2 are for a single-channel multiplier and Curve 3 for the present two-channel device working with a coincidence circuit. It can be seen that Curve 3 reaches a plateau at inter-stage potential greater than 300 V. γ-ray detection efficiency (Co^{60}) in the latter case is about 10^{-5} while α-particle detection efficiency is about unity (cathode: aluminum foil 7 μ thick). The proton counting efficiency (cathode: aluminum foil 0.145 mg/cm^2) was found to be about unity above 65 keV for the two-channel instrument working with a coincidence circuit. M.K. Listov and M.V.Kiselev prepared the multipliers.
There are 4 figures and 4 references, 1 of which is Slavic.

ASSOCIATION: Scientific Research Institute for Nuclear Physics MGU imeni M.V. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki MGU im. M.V. Lomonosova)

SUBMITTED: March 13, 1957.

AVAILABLE: Library of Congress

VASIL'YEV, S.S.; KOMAROV, V.V.; POPOVA, A.M.

Effective cross section of the $Be^9(n, \alpha)He^6$ reaction. Atom. energ. suppl. no.5:92-93 '57. (MIRA 11:2)
(Nuclear reactions) (Beryllium--Isotopes)

VASIL'YEV, S. S

56-2-30/47

AUTHOR VASIL'YEV, S.S., KOMAROV, V.V., POPOVA, A.M.

TITLE The Effective Cross Section of the Reaction $Be^9(n, 2n)$ (Effektivnoye secheniye reaktsii (n, 2n) na Be^9)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 33, Nr 2 (8), pp 527 - 528 (U.S.S.R.)

ABSTRACT For neutron energies of from 1,5 to 19 MeV the cross section of the reaction Be^9 (n, 2n) Be^8 and the competing reactions $Be^9(n, \alpha)$ He^6 and $Be^9(n, t)$ Li^7 were determined.

1.) $Be^9(n, -2n)$ Be^8

En		σ	
3	MeV	~0,03	b
4	MeV	~0,1	b
5	MeV	~0,13	b
6	MeV	~0,15	b
7,5	MeV	~0,6	b
9	MeV	~1,1	b
10,5	MeV	~1,3	b
13	MeV	~0,75	b
16	MeV	~0,8	b

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56-2-30/47

The Effective Cross Section of the Reaction $Be^9(n, 2n)$

2.) $Be^9(n, \alpha)He^6$

~3	MeV	~0,04 b
~4,2	MeV	~0,13 b
~6,2	MeV	~0,1 b

3.) $Be^9(n, t)Li^7$

~14,5	MeV	~0,2 b
17	MeV	~0,36 b

(With 1 illustration and 1 Slavic reference).

ASSOCIATION Moscow State University
(Moskovskiy gosudarstvennyy universitet)

PRESENTED BY
SUBMITTED 15.3.1957
AVAILABLE Library of Congress

Card 2/2

VASIL'YEV, S.S.

56-6-2/47

AUTHORS: Vasil'yev, S. S., Komarov, V. V., Popova, A. M.

TITLE: Problem of Fast Neutron Induced Disintegration of the C^{12} Nucleus Into Three α-Particles (K voprosu o raspade yadra C^{12} na tri α-chastitsy pod deystviyem bystrykh neytronov).

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1957, Vol. 33, Nr 6(12), pp. 1321-1324 (USSR)

ABSTRACT: The present paper investigates the course of the cross section of the decay of C^{12} into three α-particles, beginning from the threshold (Q = - 7,28 MeV) up to 19 MeV. Further, the authors tried to explain the dependence of the decay mechanisms on the energy of the inciding neutrons. The decay stars were observed ib photoplates НИКФИ Ya-2 and also in specially prepared layer-like emulsions with spectrally pure carbon (size of grain ~ 1 μ) as filling material. These plates were irradiated with neutrons from a thick lithium target. This lithium target was irradiated with deuterons, which were accelerated up to 4 MeV by means of a cyclotron. More than 500 stars of the decay of the C^{12} into 3 α-particles were investigated. The wide spectrum of the lithium

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Problem of Fast Neutron Induced Disintegration of the C^{12} Nucleus Into Three α-Particles

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neutrons made it possible to determine the course of the cross section near threshold and a precise description of the position of the maximum in the course of the effective decay cross section. The dependence of the cross section on the energy of the inciding neutrons can be explained by the diversity of the decay mechanism at different neutron energies. The decay of C^{12} into three α-particles occurs essentially by means of two principal reactions (N,n') and (n,α). In these two reactions different intermediary nuclei with different states of energy may form. The possible forms of these reactions are given here. In order to explain the mechanism of reaction in the case of different energies of the primary neutrons the excitation energies of the intermediate nuclei C^{12}, Be^9, Be^8, were computed from the observed stars. For the various intervals of the energies of the inciding neutrons the more or less known levels of these nuclei were determined. This points in the direction of a certain probability of the decay with the creation of intermediary nuclei. With increasing energy of primary neutrons the probability of direct spallations increase, which is confirmed by

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Problem of Fast Neutron Induced Disintegration of the C^{12} Nucleus Into Three α-Particles

56-6-2/47

experimental data. The decrease of the cross section of the reaction $C^{12} \longrightarrow 3\alpha$ at high energies of the inciding neutrons can be explained partly by processes of direct interaction (which develop without production of a compound nucleus). With $E_n \gtrsim 18$ MeV the angular distribution of the α-particles is anisotropic, because 70 % of α-particles fly off in a frontal direction. It is just this that tends to confirm a direct knocking out of α-particles from the C^{12} nucleus by the primary neutron. There are 2 figure, 1 table, and 4 non-Slavic references.

ASSOCIATION: Moscow State University (Moskovskiy gosudarstvennyy universitet)

SUBMITTED: June 21, 1957

AVAILABLE: Library of Congress

Card 3/3

VASIL'YEV, S.S.

47-58-2-17/30

AUTHOR: Vasil'yev, S.S., Professor and Savin, V.S. (Moscow)

TITLE: A Demonstration of the Phenomena of Resonance and Auto-oscillations (Demonstratsiya yavleniya rezonansa i avtokolebaniy)

PERIODICAL: Fizika v Shkole, 1958, Nr 2, pp 70 - 71 (USSR)

ABSTRACT: The author explains how to build a set for the demonstration of resonance and auto-oscillation phenomena. A ready made photo-relay can be used for this purpose. This device permits the periodical switching-off and on of the electric current by darkening or illuminating the photo-resistant element included in the relay. With the help of a metronome and a piece of black paper, which systematically darkens the photo-resistant part, the blinking of the electric tube can be observed. Auto-oscillation is demonstrated by a similar process, the metronome being replaced by a pendulum. There is 1 graph.

AVAILABLE: Library of Congress

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1. Physics-Study and teaching 2. Resonance-Study and teaching
3. Oscillations-Study and teaching

AUTHORS: Vasil'yev, S. S., Shavtvalov, L. Ya. SOV 48-22-7-4/26

TITLE: β-Spectra of Short-Lived Isotopes Al^{28} and F^{17}
(β-spektry korotkozhivushchikh izotopov Al^{28} i F^{17})

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 7, pp. 788-790 (USSR)

ABSTRACT: The β- and γ-radiation of short-lived isotopes (Refs 1-14) were subject to this investigation. A β-spectrometer with a magnetic lens and a γ-luminescence spectrometer was used. The isotopes were obtained by bombarding targets with deuterons of an energy of 4 MeV. The deuterons were accelerated in the cyclotron of the NIIYaF MGU and led out behind the shield into the chamber of the β-spectrometer. Al^{28}, which was obtained according to the (d, p)-reaction, was selected for investigation. The upper limit of the β-spectrum of Al^{28} equals 2820 ± 50 keV. Contrary to reference 16 the diagram was obtained with a straight curve. The half-life determined according to the variation of the intensity in the spectral range of 1100 keV amounted to 2,1 ± 0,2 minutes. The half-life determined from the γ-radiation amounted to 2,2 ± 0,1

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β-Spectra of Short-Lived Isotopes Al^{28} and F^{17} SOV/48-22-7-4/30

minutes. It is possible that a less intensive β-spectrum with an upper limit of ~6 MeV exists. The half-life corresponding to this component was estimated on the β-spectrometer (at 3,2 MeV) and furnished a value of $T_{1/2}$ = 25±20 sec. The question of the origin of this β-spectrum (if it exists at all) is not settled as yet. The β-spectrum of F^{17} was obtained from a [d, n] reaction with oxygen. The examination furnished an upper limit of 1700 ± 15 keV. From ~600 keV upwards a noticeable deviation from the straight is observed in the Fermi-diagram. The half-life measured by means of the β-spectrometer (at 800 keV) of F^{17} amounted to 71±5 sec. After the bombardment by deuterons was terminated no γ-radiation originating from the target was found. B. M. Makuni and Z. I. Tikhomirova, and the cyclotron-staff: G. V. Koshelyayev, A. A. Danilov, V. [illegible] Khlapov assisted in the work. There are 5 figures and 25 references, 5 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gos. universiteta im. M. V. Lomonosova
(Scientific Research Institute of Nuclear Physics at the Moscow State University imeni M. V. Lomonosov)

Card 2/2

21(8)
AUTHORS: Vasil'yev, S. S., Shavtvalov, L. Ya. SOV/56-36-1-47/62

TITLE: The β-Spectra of F^{20} and F^{17} (β-spektry F^{20} i F^{17})

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 36, Nr 1, pp 317-318 (USSR)

ABSTRACT: The β-spectrum of F^{20} was investigated by means of a β-spectrometer with a magnetic lens. The bundle of 4 Mev deuterons accelerated in the cyclotron of the NIIYaF MGU (Nauchnyy issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta = Scientific Research Institute for Nuclear Physics of Moscow State University) was introduced into the chamber of a β-spectrometer. The scheme of the experiment has already previously been described by the authors. As a target LiF ($\sim$0.4 mg/cm^2) was used. The spectrum recorded by the authors is a superposition of the β-spectrum of F^{20} (which was produced according to the reaction $F^{19}(d, p)F^{20}$) over the β-spectrum of Li^8 (produced according to the reaction Li^7 (d, p) Li^8). About half of the surface under the curve of

Card 1/3

The β-Spectra of F^{20} and F^{17} 307/56-35-1-47/62

the β-spectrum of Li^8 was below the upper boundary of the β-spectrum of F^{20}. The β-spectrum of F^{20} was determined by subtracting the β-spectrum of Li^8 from the β-spectra of Li^8 and F^{20} (apparently the sum of these spectra is meant). The second figure shows the Fermi diagram for F^{20}, which is rectilinear. The upper boundary of the β-spectrum of F^{20} is about (5.45 ± 0.05) Mev. Estimation of the half-life(which was carried out for the spectral range of about 1840 kev) resulted in the value (12.5 ± 2) sec. The results obtained by the present paper agree with those obtained by other authors. In the case of the irradiation of a thin target of LiF with deuterons, the relative number of radioactive nuclei of Li^8 and F^{20} in the target, and, consequently, also the relative intensity of their β-radiation in radioactive equilibrium are proportional to the ratio of the total cross section of the reactions Li^7 (d, p) Li^8 and F^{19} (d, p) F^{20}. For the ratio $\sigma(F^{19})/\sigma(Li^7)$ the value ~1.5 was found at deuteron energies

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The β-Spectra of F^{20} and F^{17}

SOV/56-36-1-47/62

of ~4 Mev. Besides, the β-spectrum of F^{17} (which was produced after the reaction O^{16} (d, n) F^{17}) was recorded. The target was a film of Celluloid $(C_6H_{10}O_5)_x$ having a thickness of ~0.5 mg/cm^2. Deviation from rectilinearity in the Fermi diagram of F^{17} begins at about 800 kev, i. e. approximately at the same energy as if lead oxide targets were used. Therefore, deviation from the straight line in the Fermi diagram of F^{17} is apparently not connected with the scattering of positrons in the target. Also the β-spectrum of F^{17} is probably a superposition of two partial spectra, and also in this case decay probably leads to the excited level of 880 kev existing in the nucleus. This assumption, however, must yet be experimentally confirmed. The authors thank Yu. M, Shirokov for useful discussions, B. M. Makuni and Z. I. Tikhomirova for their assistance, and they also express their gratitude to the cyclotron team, especially to G. V. Koshelyayev, A. A. Danilov, V. P. Khlapov, and A. P. Ozyatkin. There are 2 figures and 9 references, 1 of which is Soviet.

Card 3/4

AUTHORS: Vasil'yev, S. S., Komarov, V. V., Popova, A. M. 20-119-5-20/59

TITLE: Investigation of (n,α) and (n,t) Reactions on Be^9 (Issledovaniye reaktsiy (n,α) i (n,t) na Be^9)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 5, pp. 914-917 (USSR)

ABSTRACT: The reactions $Be^9(n,\alpha)He^6$ and $Be^9(n,t)Li^7$ taking place under participation of fast neutrons with energies of from 1 to 19 MeV were observed in specially produced layered nuclear-photoemulsions with a filler of fine powder of spectrally pure beryllium. A lithium target irradiated with 4 MeV-deuterons served as neutron source. The photoplates were inclined by 6° to the direction of the neutron beam. The irradiated and developed photoplates were checked under the microscope in order to discover two-membered stars with their center in a particle of the beryllium filler. Such stars can form by the reactions (n,α), (n,t) and (n, 2n) on Be^9 nuclei. The separation of the traces corresponding to these reactions is shortly

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discussed. Special attention was paid to the stars of the reaction (n,t) as there are no data whatever on this reaction in publications. After measuring the selected reactions $Be^9(n,\alpha)He^6$ and $Be^9(n,t)Li^7$ the calculations were carried out on the basis of the conservation theorems of energy and momentum, in order to determine the energy of the primary neutron causing this star. Besides, it was to be checked if the investigated case is correctly described by the corresponding reaction. The formula for the computation of the Energy E_n of the primary neutron in the reaction $Be^9(n,\alpha)He^6$ is put down. For the same reaction also the dependence of its cross section on the energy of the impining neutrons is mentioned. The values obtained in this coincide well with the results by P. H. Stelsen and E. C. Campbell (reference 5). This cross section has a well marked maximum within the range of energies E_n from 2 to 4 MeV. The reaction (n,α) may pass the compound nucleus Be^{10} which in this range of energy has a group of closely situated levels: 9,27 and 9,4 MeV. A further

diagram shows the angular distribution of the α-particles in the system of gravity for E_n = 2 to E_n = 5 MeV. The angular distribution does not depend on the energy of the impining neutrons and is symmetrical in relation to 90°. Also this proves the above mentioned assumption concerning the passage of a compound nucleus. The mechanism of "capturing" in the reaction (n,t) on Be^9 can be explained only hardly by a model according to which the nucleus Be^9 can be represented as a system (n,Be^8) or (n,α,α) with an odd neutron in the P-state in the external part of the nucleus. Probably in the external part of the nucleus B^9 a quasideuteron can temporarily exist. There are 3 figures and 12 references, 5 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosov

PHASE I BOOK EXPLOITATION 307/3340

Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Institut pretsizionnykh splavov

Pretsizionnye splavy (Precision Alloys) Moscow, Metallurgizdat, 1959. 268 p. (Series: Its: Sbornik trudov, vyp. 22) 2,150 copies printed.

Additional Sponsoring Agency: USSR. Gosudarstvennyy planovyy komitet

Ed.: D. I. Gabriyelyan; Ed. of Publishing House: Ya. I. Levit; Tech. Ed.: P. G. Islent'yeva.

PURPOSE: This collection of articles is intended for technical personnel and scientific workers in the metallurgical, instrument-manufacturing, and electrical-equipment-manufacturing industries. It may also be useful to students of schools of higher technical education.

COVERAGE: This collection of articles presents the results of studies of precision alloys made in recent years by the Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Institute of Ferrous Metallurgy). Properties of metal alloys which can be soldered (soft or hard) with glass and ceramic materials and alloys used for making springs are discussed. Annealing of electrical resistance and thermal expansion and the effect of irradiation on properties of alloys are considered. Problems connected with the determination of magnetic susceptibility and with rolling of bimetallic strips are reviewed. An analysis of alloys used in manufacturing high-temperature transducers and strain gages is presented. No personalities are mentioned. References follow several of the articles.

SOV/120-59-1-10/50

AUTHORS: Vasil'yev, S. S., Komarov, V. V., Popova, A. M.

TITLE: Powder Loaded Nuclear Photoemulsions (Yadernyye fotoemul'sii s poroshkovymi napolnitelyami)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 1, pp 48-50 (USSR)

ABSTRACT: A description is given of a method of introducing powders into nuclear emulsions. The powders must be insoluble and must be prepared from chemically pure elements or compounds. The size of the powder particles has a lower limit equal to the size of the grains of the background. Powders have been used consisting of particles whose diameter was 1-2 μ. The powders were deposited on the surface of a nuclear emulsion which was then covered by another emulsion. The deposition of the powder was carried out in a "powder chamber" which was found to be better than the deposition by electrical means or by sedimentation from a suspension. The amount of powder-dust deposited was determined by counting the number of particles per unit area under a microscope. The accuracy

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Powder Loaded Nuclear Photoemulsions

of this method is 15%. The amount of material introduced into the emulsion in this way was between 10^{19} and 10^{20} nuclei per cm^2 of the emulsion. There are no figures, 7 references, of which 4 are Soviet and 3 French.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki MGU (Scientific Research Institute for Nuclear Physics of the Moscow State University)

SUBMITTED: January 6, 1958.

AKISHIN, A.I.; VASIL'YEV, S.S.

Secondary electron emission effected by lithium, boron, and nitrogen ions with energy of up to 10 Mev. Fiz.tver.tela 1 no.5:833-834 My '59. (MIRA 12:4)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.
(Electron emission)

SOV/126-7-1-7/28

AUTHORS: Artsishevskiy, M.A., Vasil'yev, S.S., Koshelyayev, G.V. and Selisskiy, Ya.P.

TITLE: The Effect of Deuteron-Bombardment on Electrical Resistance of the Ordering Alloys Ni_3Fe, Fe_3Al and the Ageing Alloy Fe-Ni-Ti (Deystviye bombardirovki deytronami na elektrosoprotivleniye uporyadochivayushchikhsya splavov Ni_3Fe, Fe_3Al i stareyushchego splava Fe-Ni-Ti)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 1, pp 53-56 (USSR)

ABSTRACT: The authors studied the effect of irradiation with 4 MeV deuterons on electrical resistance of the ordering alloys Ni_3Fe, Fe_3Al and the ageing alloy with 35% Ni, 4.5% Ti and the rest Fe. Samples were of 20-30 μ thickness which ensured interaction of deuterons with the lattice atoms throughout the whole sample. Before measurement, samples were subjected to various forms of heat treatment. The ordered state of the Ni_3Fe alloy was obtained by slow cooling for a fortnight from 550°C. The Fe_3Al alloy was

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The Effect of Deuteron-Bombardment on Electrical Resistance of the Ordering Alloys Ni_3Fe, Fe_3Al and the Ageing Alloy Fe-Ni-Ti

ordered by cooling at the rate of 25°C/hour from 550-250°C. The disordered states of the Ni_3Fe, Fe_3Al alloys were produced by quenching from 850°C. Ageing of the Fe-Ni-Ti alloy was achieved by four-hour heating of cold-deformed samples at 700°C. The latter alloy was also tested after quenching from 1000°C. For irradiation the samples were placed in a cassette cooled by running water. The deuteron current density did not exceed 1 $\mu A/cm^2$, and the temperature of the sample during irradiation did not rise above 40°C. Electrical resistance was measured by means of a potentiometer before and after irradiation. The results are shown in Tables 1-3. Irradiation increased, in general, the electrical resistance of the annealed (ordered) Fe_3Al and decreased that of the quenched Fe_3Al. The electrical resistance of both the quenched and the annealed (ordered) Ni_3Fe fell with increase of the integral dose received. Low intensities of irradiation, up to 5×10^{16} deuterons/cm^2, decreased the electrical resistance of both Fe_3Al and Ni_3Fe. In the case of the

 Fe-Ni-Ti alloy the changes on irradiation were hardly

The Effect of Deuteron-Bombardment on Electrical Resistance of the Ordering Alloys Ni_3Fe, Fe_3Al and the Ageing Alloy Fe-Ni-Ti

larger than the experimental error, but their sign was positive in quenched samples and negative in aged samples. The authors conclude that deuteron bombardment produces further ordering of the Ni_3Fe alloy. In the Fe_3Al alloy deuteron irradiation produces a state intermediate between the disordered and ordered states. After irradiation the samples were subjected to tempering at various temperatures. In the case of Fe_3Al the shape of the electrical resistance curves (Fig.1) of irradiated samples, which were subsequently tempered at 250°C, confirmed that deuteron irradiation does in fact produce an intermediate state of ordering. When the irradiated Ni_3Fe samples were tempered the durations of tempering were insufficient to reach a state of equilibrium (Fig.2). No noticeable difference was observed between the behaviour of irradiated and the non-irradiated Fe-Ni-Ti samples after tempering. There are 2 figures, 3 tables and 4 English references.

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Inst. Precision Alloys TsNIIChM
2nd Sci Res Physics Inst. Moscow State U.

ARTSISHEVSKIY, M.A.; VASIL'YEV, S.S.; KOSHELYAYEV, G.V.; SELISSKIY, Ya.P.

Effect of deuteron bombardment on the electric resistance of ordered and aging alloys. Sbor.trud.TSNIICHM no.22:168-176 '59. (MIRA 13:6)

(Alloys--Electric properties) (Deuterons)

SOV/76-33-9-27/37

5(4)

AUTHOR: Vasil'yev, S. S.

TITLE: The Kinetics of Molecular Excitation by Electromagnetic and Mechanical Waves. III. On the Part Played by Structure Complexes in the Primary Activation Process of Photosynthesis

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 9, pp 2053 - 2062 (USSR)

ABSTRACT: Though many articles were written on the photosynthesis (P) of carbohydrates in the cells of green plants (Refs 1-11), the relation between the reaction of (P) and the structure of those elements in which (P) proceeds in plant cells (PC), has not yet been explained. This problem is discussed here on the basis of investigations concerning the conditions of energy absorption in the molecules of structure complexes (SC) (Refs 12,13). In accordance with data of publications the author assumes that the chlorophyll (C) in the (PC) of chloroplast is concentrated in still smaller partial structures, i.e. in grains (G) which are composed of two lipoid lamellae (L) in the form of (L) of a plane condenser, the light-absorbent molecules of (C) being contained between them. Unlike metallic (L)

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of a condenser, lipoid (L) are unequally charged by the light beam so as to produce the lattice structure of (G) that has already been found. The electric capacitance of this condenser composed of the two lipoid (L), as well as the inductance (I) of such an (SC) may be expressed in cgs units. The (SC) exhibit tuned frequencies (Ref 13). The (I) of the (SC) is brought about by the magnetic field of the displacement current which charges the condenser. The frequency of the (SC) is assumed to be close to the frequency of maximum light absorption through (C), as confirmed by the diameter of the lipoid (L) (0.3-0.5 μ). The structural properties of the (G) in the centers of (P) ensure high efficiency of the energy absorbed so that the shift of the initial substance, the intermediates and end products of (P) between the (L) about these centers becomes easier. This may be especially important for the cyclic course of (P). Contrary to previous assumptions, it was found that light absorption in the (SC) takes a course different from that in (C)-solutions. Further investigations of this problem are recommended. In conclusion, the scientists Ye. Ra-

The Kinetics of Molecular Excitation by Electromagnetic SOV/76-33-9-27/37
and Mechanical Waves. III. On the Part Played by Structure Complexes in the Primary Activation Process of Photosynthesis

binovich, A. L. Kursanov, B. B. Vartapet'yan, and A. A. Krasnovskiy are mentioned. There are 47 references, 13 of which are Soviet.

ASSOCIATION: Tekhnologicheskiy institut legkoy promyshlennosti, Moskva (Moscow, Technological Institute for Light Industry)

SUBMITTED: March 6, 1958

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VASIL'YEV, S.S.; SHAVTVALOV, L.Ya.

β-spectra of F^{20} and F^{17}. Zhur.eksp. i teor.fiz. 36 no.1:317-318 Ja '59. (MIRA 12:2)

(Beta rays--Spectra) (Fluorine--Isotopes)

83677

S/048/60/024/009/011/015
B063/B063

24.6810

AUTHORS: Vasil'yev, S. S., Komarov, V. V., Popova, A. M.

TITLE: Energy States of the Be^8 Nucleus in the Decay Reaction of the C^{12} Nucleus in Three Alpha Particles Under the Action of Protons and Neutrons

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 9, pp. 1149-1152

TEXT: The disintegration of $C^{12} \longrightarrow 3\alpha$ under the action of neutrons having energies between 8.5 and 19 Mev and of protons having energies between 15 and 30 Mev was studied in Ref. 1 and Ref. 2, respectively. The disintegration of $C^{12}(n, n'3\alpha)$ and $C^{12}(p, p'3\alpha)$ in photoemulsions bombarded with neutrons and protons of different energies was observed in the form of three- and five-pronged stars, respectively. The 72-cm cyclotron of NIIYaF MGU and the 120-cm proton synchrotron of NIIYaF MGU were used for this purpose. The analysis of the stars yielded data on the energies and the spatial distribution of the particles participating in the dis-

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Energy States of the Be^8 Nucleus in the Decay Reaction of the C^{12} Nucleus in Three Alpha Particles Under the Action of Protons and Neutrons

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integration and on the excitation energies of compound nuclei (Be^8). The analysis was made by well-known methods. The bombardment technique is described in Ref. 5. Fig. 1a shows the energy distribution of alpha particles from the $C^{12}(n, n' 3\alpha)$ decay in the center-of-mass system of the C^{13} nucleus for a group of energies of the incoming neutrons. Fig. 1b shows the energy distribution of the alpha particles from the $C^{12}(p, p' 3\alpha)$ decay in the center-of-mass system of the N^{13} nucleus for four groups of energies of the incoming protons. Fig. 2a and b show excitation energies of Be^8, which were calculated for every single pair of particles in the stars observed. The experimental histogram (Fig. 2a) as a whole agrees with previous papers (Ref. 7). The data obtained (Fig. 1) indicate the possibility of a simultaneous decay reaction of C^{12} to form three alpha particles and of a strong resonance interaction of the particles in the final state. In this case, the lifetime of the Be^8 nucleus is about the nuclear life-time.

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Energy States of the Be^8 Nucleus in the Decay Reaction of the C^{12} Nucleus in Three Alpha Particles Under the Action of Protons and Neutrons

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B013/B063

There are 2 figures and 9 references: 4 Soviet and 1 Swiss.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gos. universiteta im. M. V. Lomonosova (Scientific Research Institute of Nuclear Physics of Moscow State University imeni M. V. Lomonosov)

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S/076/60/034/010/004/022
B015/B064

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5 4300 1273, 1142, 1160

AUTHOR: Vasil'yev, S. S.

TITLE: Kinetic Analysis of Chain Reactions. VI. Conversion of the Form of Solutions of the Fundamental Equations of Chain Reaction Kinetics for the Case of Three Kinds of Active Particles

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 10, pp. 2174-2183

TEXT: In continuation of previous papers (Refs 1-6) in which kinetic formulas for the determination of chain reaction kinetics were derived for two kinds of active particles, the present paper describes the deduction of similar equations for a chain reaction in which three kinds of active particles take part; the equations of the previous papers were used for this purpose. The author proceeds from the following equations holding for three kinds of active particles:

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$$\frac{dn_1}{dt} = u_1 - s_1 n_1 + r_{12} n_2 + r_{13} n_3,$$
$$\frac{dn_2}{dt} = u_2 + r_{21} n_1 - s_2 n_2 + r_{23} n_3,$$
$$\frac{dn_3}{dt} = u_3 + r_{31} n_1 + r_{32} n_2 - s_3 n_3.$$

(u_i = rate of the appearance of active particles as a result of "spontaneous" processes; s_i = generalized kinetic reaction constants of active particles, and r_{ij} = constants determining the rate of appearance of active particles of the i type as the result of a reaction of particles of the j type; they may be defined as "constants of the regeneration rate of active particles"; i = 1,2,3, and j = 1,2,3). The dimensionless quantities ω_{ij} are introduced, which represent the mathematical probability of regeneration of active particles of the i type, and read as follows:

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$$\omega_{21} = \frac{r_{21}}{s_1}; \quad \omega_{31} = \frac{r_{31}}{s_1}; \quad \omega_{12} = \frac{r_{12}}{s_2}; \quad \omega_{32} = \frac{r_{32}}{s_2}; \quad \omega_{13} = \frac{r_{13}}{s_3}; \quad \omega_{23} = \frac{r_{23}}{s_3}. \tag{2}$$

Introducing expressions from previous papers (Refs. 3 and 6):

$$H^{(m)} = \sum_j \frac{u_i \Gamma_{jm}}{\Gamma}; \quad h^{(m)} = \sum_j \frac{n_j^{(0)} \Gamma_{jm}}{\Gamma};$$

$$F^{(m)} = \frac{f^{(m)} - 1}{\varphi^{(m)}}; \quad f^{(m)} = e^{\varphi^{(m)} t} \tag{17}$$

(where i (or j) = the number of active particles, m = number of roots of the characteristic equation

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$$\varphi^3 + (s_1 + s_2 + s_3)\varphi^2 + (s_1s_2 + s_1s_3 + s_2s_3 - r_{21}r_{12} - r_{31}r_{13} - r_{32}r_{23})\varphi + \\ + s_1s_2s_3 - r_{32}r_{23}s_1 - r_{31}r_{13}s_2 - r_{21}r_{12}s_3 - r_{31}r_{12}r_{23} - r_{32}r_{21}r_{13} = 0. \quad (4)$$

u_j = rates of appearance of active particles due to "spontaneous" processes, and $n_j^{(0)}$ = initial concentration of active particles) and

$$\mu_{21} = \frac{u_2}{u_1}; \quad \mu_{31} = \frac{u_3}{u_1}; \quad \pi_{21} = \frac{n_2^{(0)}}{n_1^{(0)}}; \quad \pi_{31} = \frac{n_3^{(0)}}{n_1^{(0)}} \quad (19)$$

the author represents the general integral of the system of differential equations (1) in the form of the following kinetic equations:

$$n_1 = \frac{u_1}{s_1}\left(G_1^{(1)} + G_1^{(2)} + G_1^{(3)}\right) + n_1^{(0)}\left(Q_1^{(1)} + Q_1^{(2)} + Q_1^{(3)}\right). \quad (21)$$

$$\Phi = \varphi^{(1)s}\left(\varphi^{(2)} - \varphi^{(3)}\right) + \varphi^{(2)s}\left(\varphi^{(3)} - \varphi^{(1)}\right) + \varphi^{(3)s}\left(\varphi^{(1)} - \varphi^{(2)}\right); \quad (22)$$

$$g_1^{(m)} = \left(1 + \frac{\varphi^{(m)}}{s_2}\right)\left(1 + \frac{\varphi^{(m)}}{s_3}\right) - \omega_{32}\omega_{23} + \mu_{21}\left(\omega_{12} + \omega_{32}\omega_{13} + \omega_{13}\frac{\varphi^{(m)}}{s_3}\right) + \mu_{31}\left(\omega_{13} + \omega_{12}\omega_{23} + \omega_{13}\frac{\varphi^{(m)}}{s_2}\right), \quad (23)$$

$$G_1^{(1)} = g_1^{(1)}\frac{\varphi^{(2)}\varphi^{(3)}\left(\varphi^{(2)} - \varphi^{(3)}\right)}{\Phi}\frac{e^{\varphi^{(1)}t} - 1}{\omega - 1}; \quad (24)$$

$$G_1^{(2)} = g_1^{(2)}\frac{\varphi^{(3)}\varphi^{(1)}\left(\varphi^{(3)} - \varphi^{(1)}\right)}{\Phi}\frac{e^{\varphi^{(2)}t} - 1}{\omega - 1}; \quad (25)$$

$$G_1^{(3)} = g_1^{(3)}\frac{\varphi^{(1)}\varphi^{(2)}\left(\varphi^{(1)} - \varphi^{(2)}\right)}{\Phi}\frac{e^{\varphi^{(3)}t} - 1}{\omega - 1}, \quad (26)$$

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$$q_1^{(m)} = \left(1+\frac{\varphi^{(m)}}{s_3}\right)\left(1+\frac{\varphi^{(m)}}{s_3}\right) - \omega_{32}\omega_{23} + \pi_{21}\left(\omega_{12}+\omega_{32}\omega_{13}+\omega_{12}\frac{\varphi^{(m)}}{s_3}\right) + \pi_{31}\left(\omega_{13}+\omega_{12}\omega_{23}+\omega_{13}\frac{\varphi^{(m)}}{s_3}\right), \quad (27)$$

имеем

$$Q_1^{(1)} = q_1^{(1)}\frac{s_2 s_3(\varphi^{(2)}-\varphi^{(3)})}{\Phi}e^{\varphi^{(1)}t}; \quad (28)$$

$$Q_1^{(2)} = q_1^{(2)}\frac{s_3 s_1(\varphi^{(3)}-\varphi^{(1)})}{\Phi}e^{\varphi^{(2)}t}; \quad (29)$$

$$Q_1^{(3)} = q_1^{(3)}\frac{s_1 s_2(\varphi^{(1)}-\varphi^{(2)})}{\Phi}e^{\varphi^{(3)}t}. \quad (30)$$

Equation (21) defines the rise of particle concentration of the type i = 1, in time; the quantities $C_1^{(m)}$ and $Q_1^{(m)}$ are computed from the auxiliary equations (22) and (23). If in equations (21), (23) - (30) the subscripts

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are exchanged, i.e., $1 \rightleftarrows 2$, equations are obtained that contain the concentrations of active particles of the type "2". Thus, it may be directly seen from the equations given how the quantities u_i, s_i, ω_i, $n_i^{(0)}$, $\varphi^{(1)}$, $\varphi^{(2)}$, $\varphi^{(3)}$ influence the change of concentration of active particles. The author investigates the equations (21) - (30) in two manners. On the one hand, he shows that the present equations may be transformed into those discussed in Ref. 6 for two kinds of active particles, and, on the other hand, how it is possible to calculate , from equations (21) - (30), the chain reaction of methane oxidation under the action of the active particles CH_2, CHOH, and O (Refs. 2,5). Some examples are discussed to illustrate the applicability of these equations under different conditions of the course of chain reactions. There are 8 Soviet references.

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Kinetic Analysis of Chain Reactions. VI. Conversion of the Form of Solutions of the Fundamental Equations of Chain Reaction Kinetics for the Case of Three Kinds of Active Particles

S/076/60/034/010/004/022
B015/B064

ASSOCIATION: Tekhnologicheskiy institut legkoy promyshlennosti Moskva (Technological Institute of the Light Industry, Moscow)

SUBMITTED: November 18, 1958

X

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S/903/62/000/000/018/044
B102/B234

AUTHORS: Vasil'yev, S. S., Romanovskiy, Ye. A., Timushev, G. F.

TITLE: Problem of the inelastic scattering mechanism of slow protons from Al^{27}

SOURCE: Yadernyye reaktsii pri malykh i srednikh energiyakh; trudy Vtoroy Vsesoyuznoy konferentsii, iyul' 1960 g. Ed. by A. S. Davydov and others. Moscow, Izd-vo AN SSSR, 1962, 201-206

TEXT: In order to find out whether direct processes play the main role even at low proton energies and whether the anisotropy observed in the angular distributions is due to compound nucleus formation of a with several levels excited, or whether it may be also explained by a direct mechanism, the inelastic scattering of 6.6-Mev protons from Al^{27} was investigated. In the $Al^{27}+p$ reaction, Si^{28} is formed with an excitation energy of ~18 Mev. If the level density of the compound nucleus is assumed to be $\sim\exp(2\sqrt{\beta E_{exc}})$, then for E_{exc} ~18 Mev the level distance will be 4 - 6 kev. Then, in the

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case of an energy spread of the protons effecting overlap of a great number of levels, the quantum characteristics is random and the proton angular distribution in the case of Si^{28} formation will be isotropic. In the case of direct processes no strong dependence of σ on Θ may be expected. A double-focusing magnetic analyzer was used for measuring the angular distributions in the interval 30-150° of six proton groups scattered from Al^{27} with excitation of the levels 0.840, 1014, 2.216, 2.743, and 3.000 Mev. The protons were accelerated in the 120-cm cyclotron of the NIIYaF MGU, their energy spread was 45 kev, the target thickness 20 kev. The differential elastic scattering cross sections were determined by way of comparison with those of Au^{197} and the compound nucleus formation cross section was estimated from the relation $\sigma_c \simeq \pi(R_o+\lambda\!\!\!^{-})^2(1-V/E_p)$ where $R_o = 1.4A^{1/2}$ Fermi, $\lambda\!\!\!^{-}$ is the reduced proton wavelength. With $V = Ze^2/(R_o+\lambda\!\!\!^{-})$ this yields $\sigma_c \sim 600$ mb. A comparison of the results indicates that the asymmetry observed may be explained by the contribution of direct processes to scattering and an experimental-theoretical comparison on the basis of the direct-

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interaction relation $d\sigma/d\Omega \sim j_1(|\vec{k}_i - \vec{k}_f|R_o)^2$ verifies this conclusion. j_1 is a spherical Bessel function of l-th order, $\vec{k}_i$, $\vec{k}_f$ are the wave vectors of incident and scattered proton, and R_o the interaction radius. There are 5 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki, MGU im. M. V. Lomonosova (Scientific Research Institute of Nuclear Physics, MGU imeni M. V. Lomonosov)

Card 3/3

AKISHIN, A.I.; VASIL'YEV, S.S.; ISAYEV, L.N.

Cathode sputtering of mica and molten quartz by krypton ions.
Izv. AN SSSR. Ser.fiz. 26 no.11:1356-1358 N '62. (MIRA 15:12)

(Sputtering (Physics)) (Mica) (Quartz) (Krypton)

BOCHAGOV, B.A.; VASIL'YEV, S.S.; SEMENCHUK, G.G.; SOLYAKIN, G.Ye.

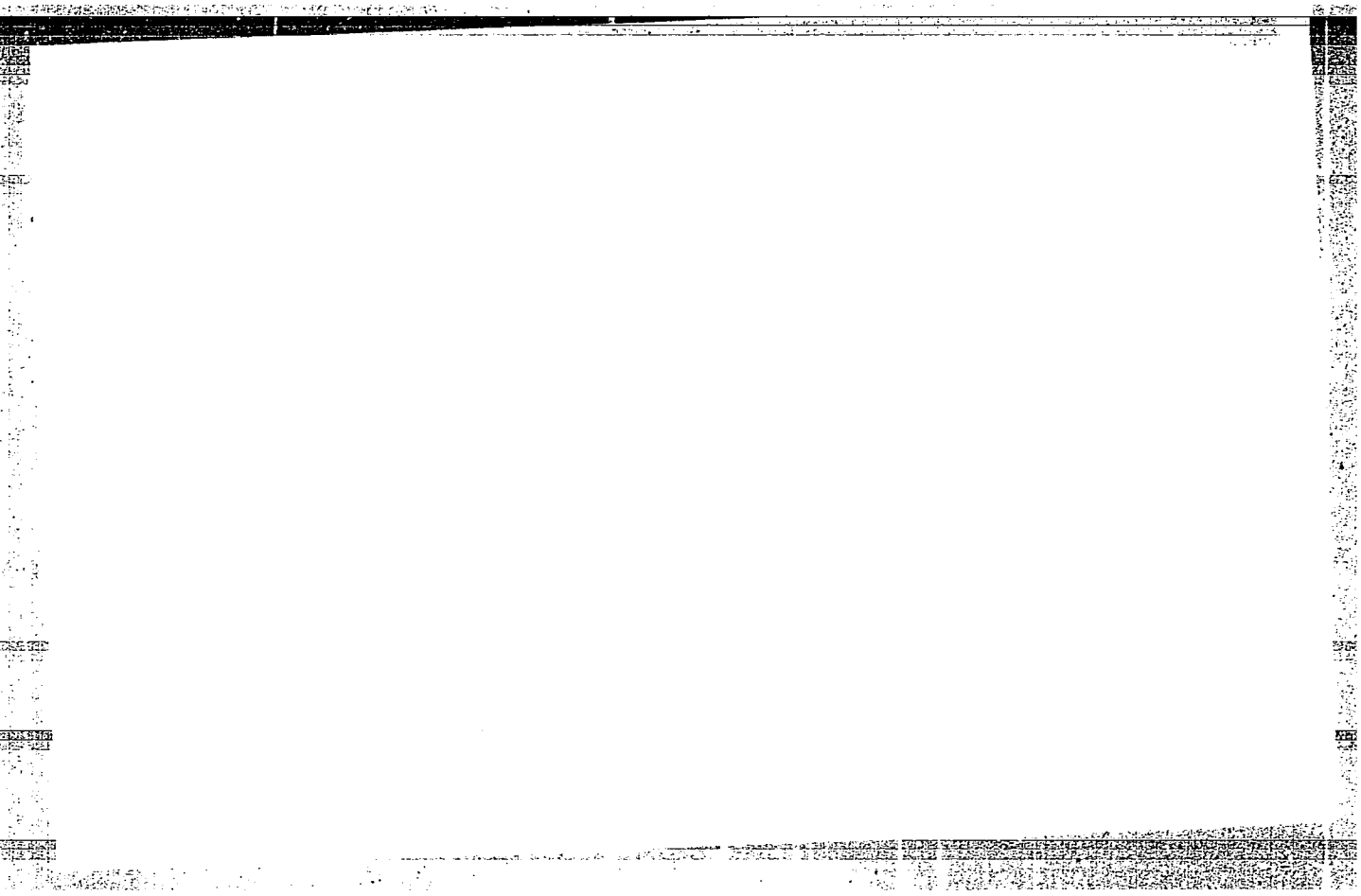
Fission of U^{238} nuclei by 26.5 Mev. α-particles. Atom. energ. 17 no.3:219-220 S '64. (MIRA 17:9)

BASKOVA, K.A.; VASIL'YEV, S.S.; KHAMO-LEYLA, M.A.; SHAVTVALOV, L.Ya.

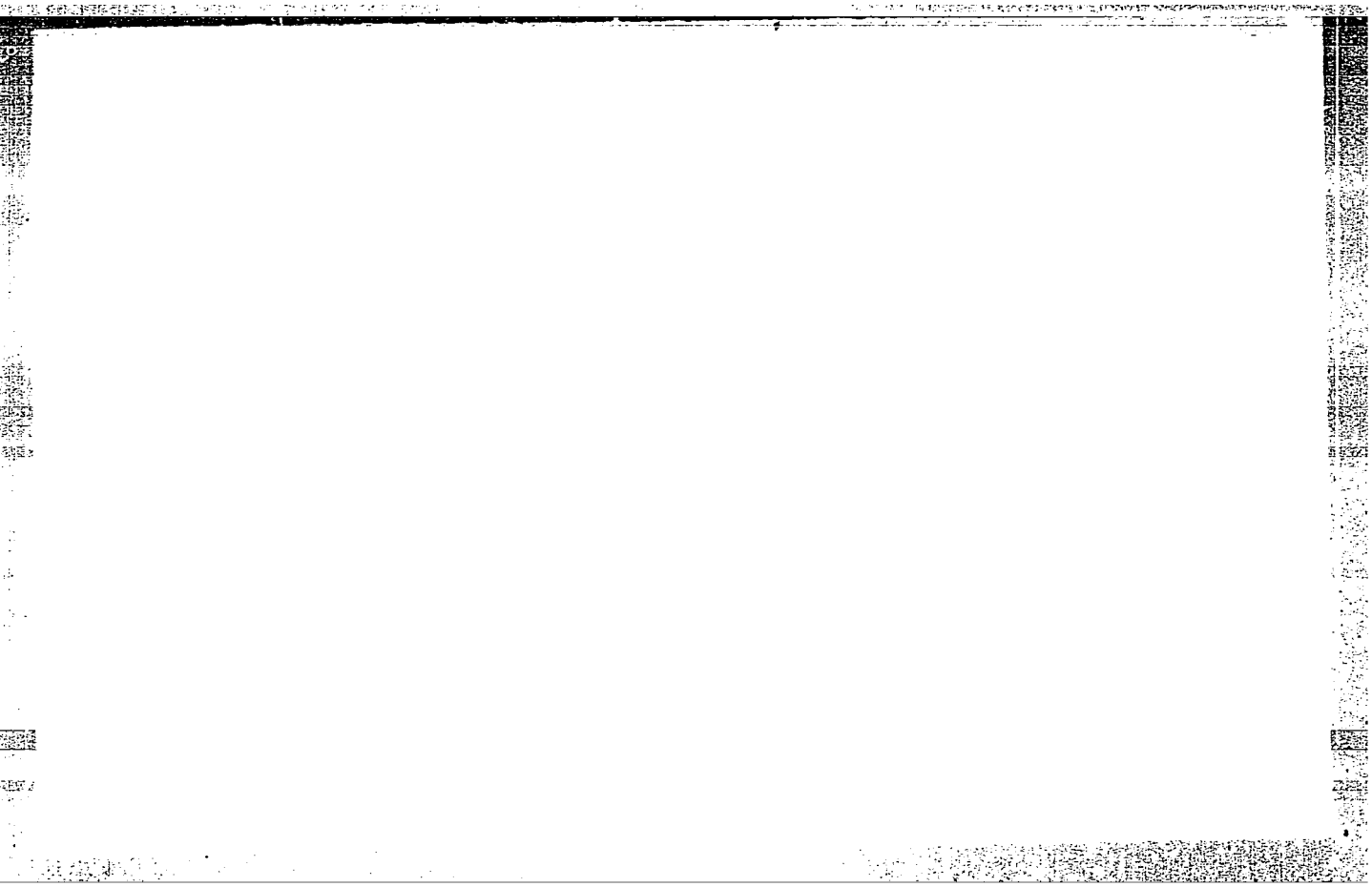
Study on β and γ-radiation from Sc^{43} and Sb^{117}. Zhur eksp. i teor. fiz. 47 no.3:1162-1164 S '64. (MIRA 17:11)

VASIL'YEV, S.S.; MIKHALEVA, T.N.; CHUPRUNOV, D.L.

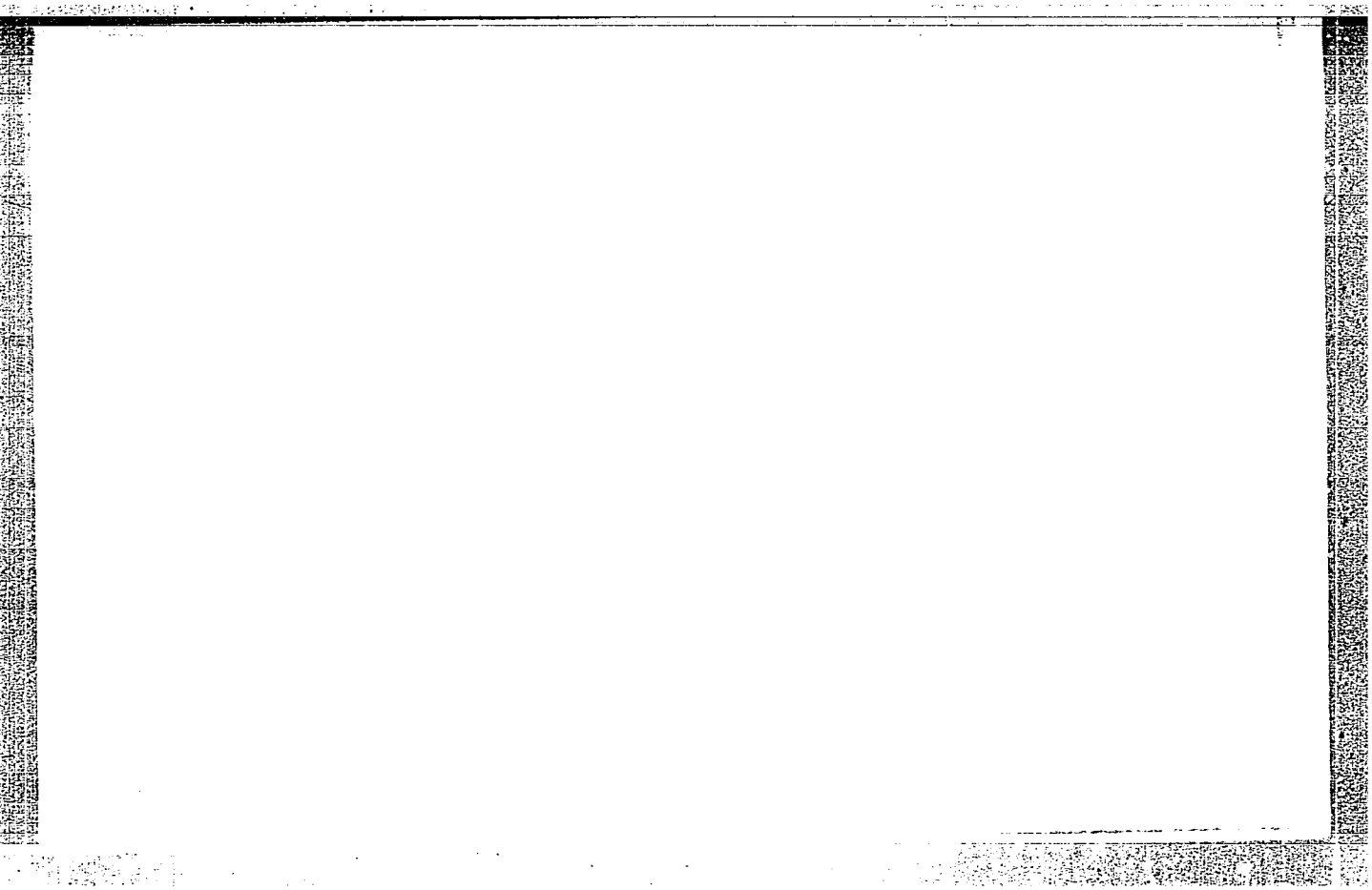
Study of the reaction $Al^{27}(pp')Al^{27}$ within the energy excitation range of 3.5 to 5.0 Mev. Izv. AN SSSR Ser. Fiz. 29 no.1:121-125 Ja '65. (MIRA 18:2)



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858910019-9"



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858910019-9"



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858910019-9"

L 41321-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6019607 (A,N) SOURCE CODE: UR/0048/66/030/002/0214/0216

AUTHOR: Vasil'yev, S.S.; Mikhaleva, T.N.; Chuprunov, D.L.

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University im. M.V.Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

TITLE: Investigation of inelastic proton scattering with excitation of the 5.15 and 5.24 MeV levels in Al-27 /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 Jan. to 2 Feb. 1965/

SOURCE: AN SSSR.Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 214-216

TOPIC TAGS: proton scattering, inelastic scattering, nuclear energy level, angular distribution, aluminum

ABSTRACT: Inelastic scattering of 6.28 to 6.63 MeV protons from a 3.6 micron aluminum foil target has been investigated. The proton beam from a 120 cm cyclotron was focused with quadrupole lenses, deflected 45° by a magnet, and collimated over a 3.7 m base. The scattered protons that left the Al^{27} scatterer in the 5.15 MeV or the 5.24 MeV excited state were recorded with a scintillation spectrometer. Differential cross sections for excitation of the two levels by protons of different energies are presented. The angular distributions were all symmetric about 90° in the

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L 41321-66

ACC NR: AP6019607

center of mass system, but the shapes of the curves varied greatly with the incident proton energy. The angular distributions were compared with calculations based on the statistical model of W.Hauser and H.Fesbback (Phys. Rev., 87, 366 (1952)). The angular distributions for excitation of the 5.15 MeV level were described with three statistical theory expressions for an exit channel spin of 2 and an orbital angular momentum change of 2, and those for excitation of the 5.24 MeV level were described with two expressions for an exit channel spin of 2 and an orbital angular momentum change of 1. The spin and parity of the 5.15 MeV level are $3/2^+$ or $5/2^+$, and those of the 5.24 MeV level are $3/2^-$ or $5/2^-$. States of the Si^{28} compound nucleus having spins of 2, 3, and 4, but not states having spins of 0 or 1, participated in the reactions. The authors thank the cyclotron staff and I.I.Ageyev for assistance with the work. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20 SUBM DATE: 00 ORIG. REF: 005 OTH REF: 005

Card 2/2

L 01813-67 EWT(m)/T

ACC NR: AP6035634 SOURCE CODE: UR/0089/66/020/005/0432/0434

AUTHOR: Vasil'yev, S. S.; Mikhaleva, T. N.; Vorob'yev, Yu. A.; Chuprunov, O. L.

ORG: none

TITLE: Utilization of fast charged particle inelastic scattering for analysis of composition of materials

SOURCE: Atomnaya energiya, v. 20, no. 5, 1966, 432-434

TOPIC TAGS: inelastic scattering, scintillation spectrometer, proton beam

ABSTRACT: The impurities in Al samples were analyzed by using a 6.6-Mev proton beam and a 100-channel scintillation spectrometer with Cs(Tl) as a proton recorder. The recording time for each angle of the scattered proton spectrum was 10 min at 2.0 to 6.5 Mev. The spectra obtained were then analyzed, and the proton elastic and inelastic scattering peaks from the Al nuclei were determined along with the scattering maxima of other nuclei. Impurities consisting of Ca, Mn, Si, and Na were found. The results were compared with neutron activation data on the Si impurity. Orig. art. has: 3 figures and 1 table. [NA]

SUB CODE: 20 / SUBM DATE: 18 Sep 65 / ORIG REF: 005 / OTH REF: 003

UDC: 539.106

Card 1/1 fv

0922 0036

L 15177-66 EWT(m) DIAAP

ACC NR: AP6001143 SOURCE CODE: UR/0367/65/002/003/0402/0408

AUTHOR: Baskova, K. A.; Vasil'yev, S. S.; Rudenko, N. P.; Sevast'yanov, A. I.; Khamo-Leyla, M. A.; Shavtvalov, L. Ya.

ORG: Institute of Nuclear Physics, Moscow State University (Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)

TITLE: Investigation of the radiation of $_{49}Cd^{117}$

SOURCE: Yadernaya fizika, v. 2, no. 3, 1965, 402-408

TOPIC TAGS: cadmium, beta spectrum, half life, isotope separation, indium

ABSTRACT: Cd^{117} was obtained from the reaction Cd^{116} (d,p). As a result of the investigations conducted it is shown that the half-life of Cd^{117} is about three hours. The half-life of 50 min previously ascribed erroneously to Cd^{117} is, apparently, that of In^{116} obtained from the reaction Cd^{116} (d, 2n). The beta-spectrum of Cd^{117} (3 hr) was investigated on a beta-spectrometer with a magnetic lens. The upper boundaries of the partial beta-spectra have the energy of 670; 1290; 1800; and 2200 kev. The value of log ft proved to be equal to 4.9; 6.7; 6.9; and 7.6, respectively. The results presented, as well as the investigations of the $\beta\gamma$-coincidences made it possible to construct a decay scheme of Cd^{117} which differs substantially from that in the literature. Authors express their gratitude to Yu. A. Vorob'yev, V. S. Zazulin, N. S. Kirnichev, and M. R. Akhmed for assistance in the work. Orig. art. has: 7 figures and 1 table.

Card 1/1 SUB CODE: 20, 18 / SUBM DATE: 19Feb65 / ORIG REF: 001 / OTH REF: 012

VASIL'YEV, S.S., red.

[Economics of Soviet trade] Ekonomika sovetskoi torgovli. Moskva, Izd-vo polit. lit-ry, 1964. 243 p. (MIRA 18:7)

1. Moscow. Institut narodnogo khozyaystva.

RASKOVA, K.A., VASIL'YEV, S.S., RUDENKO, N.P., SEVAST'YANOV, A.I., KHAMOLEYIA, M.A., SHAVTVALOV, L.Ya.

Studying the radiation from $^{45}Cd^{117}$. Izv. fiz. 2 no.3:402-408 S '65. (MIRA 18:9)

1. Laboratoriya yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

SIDOROV, V.G., aspirant; VASIL'YEV, S.S., doktor khimicheskikh nauk, prof.

Evaporation of liquid into a gas-filled space under extensive change of the conditions of gas flow over the surface of evaporation. Report No.1. Nauch. trudy MTILP no.30:207-213 '64. (MIRA 18:6)

1. Kafedra fiziki Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

VASIL'YEV, S.S.; MOSKALEVA, T.N.; CHERNYSHEV, B.I.

Study of the (p, p') reaction on the 1.65 and 1.83 Mev. levels in Al^{27}. Zhur. eksp. i teor. fiz. 47 no.4:1585-1587 O '64.
(MIRA 18:1)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

PASKOVA, K.A.; VASIL'YEV, S.S.; KHAN-IS'YIA, M.A.; SHAVTVALOV, I.Ya.

Study of Cr^{49}, Ge^{69}, and Ga^{68} radiation. Izv. AN USSR Ser. Fiz. 29 no.2:200-209 F '65. (MIRA 18:3)

VASIL'YEV, S.S.

Kinetic analysis of chain reactions. Part 7. Zhur. fiz. khim. 38 no.9:2214-2222 S '64. (MIRA 17:12)

1. Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti.

L 15124-65 EWT(m) DIAAP/SSD/AFWL DM
ACCESSION NR: AP4045337 S/0089/64/017/003/0219/0220

AUTHOR: Bochagov, B. A.; Vasil'yev, S. S.; Semenchuk, G. G.; Solyakin, G. Ye.

TITLE: Fission of U^{238} nuclei by alpha-particles of 26.5 Mev energy

SOURCE: Atomnaya energiya, v. 17, no. 3, 1964, 219-220

TOPIC TAGS: nuclear fission, U^{238} fission, α-particle, compound nucleus, thermal neutron

ABSTRACT: B. A. Bochagov has shown in a previous work that the dependence of the total kinetic energy E_k of the fragments on the mass ratio R (≥ 1) in fission by thermal neutrons and in spontaneous fission is described by the formula

$$E_k = aA'^2/(R+1)b$$

where $A' = A - \nu$, A is mass number of the compound nucleus, ν - average number of prompt neutrons, a and b are coefficients, equal 1.07 and 33.3 Mev, respectively. The analysis of data on photofission of U^{238} and Th^{232} and of fission of U^{235} and Th^{232} by neutrons of 14 Mev energy showed that the formula is valid in the first case, whereas b is smaller in the second case. The author suggested

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ACCESSION NR: AP4045337

that this is connected with the linear momentum contributed by the bombarding particle. In the present work, the kinetic energy of the fragments of U^{238}-nucleus split by α-particles of 26.5 Mev, that is, of much larger momentum, was measured. The experiments were conducted with the cyclotron of the Institute for Nuclear Physics MGU. The coefficient b was found to be actually smaller thus supporting the author's suggestion. The authors are grateful to A. I. Komarov, Yu. A. Vorobiev, I. P. Ivanov, and A. F. Tulinov for [illegible] help. 1 figure.

ASSOCIATION: None

SUBMITTED: 17Jan64 ENCL: 00

SUB CODE: NP NO REF SOV: 004 OTHER: 004

Card 2/2

L 11016-65 EWT(m) DIAAP/SSD

ACCESSION NR: AP4046438 S/0056/64/047/003/1162/1164

AUTHORS: Baskova, K. A.; Vasil'yev, S. S.; Khamo-Leyla, M. A.; Shavtvalov, L. Ya.

TITLE: Investigation of Beta and Gamma Radiation from Sc-43 and Sb-117 19

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 3, 1964, 1162-1164

TOPIC TAGS: scandium, antimony, beta radiation, gamma radiation, beta spectrum, gamma spectrum, beta gamma correlation

ABSTRACT: The β spectra of the two isotopes were determined with a magnetic lens spectrometer described by the authors previously (ZhETF [illegible]). The spectrum was measured in a scintillation [illegible] spectra

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L 11016-65
ACCESSION NR: AP4046438

with end point energies 1220 ± 40 keV (67%), 820 keV (26%), and 450 keV (7%). The γ spectrum showed easily resolved lines with energies 219, 370, 620, and 960 keV with corresponding intensities 1.0, 2.0, 0.5, and 0.1 relative to the annihilation line intensity (taken equal to 100). β-γ coincidences were measured for Sc^{43} with a β spectrometer connected in coincidence with a single-channel scintillation spectrometer and gave end point values which agreed well with the end point values 820 ± 40 and 500 ± 40 keV, which agreed well with the values of the end point energies determined by the composition of the partial β^+ spectra. In the case of Sb^{117}, the β spectrum proved to be simple with an end point energy 570 ± ± 40 keV, in agreement with the only published data. The γ spectrum contains a single 160-keV line, whose intensity referred to a single γ particle is 44.4. The β-γ coincidences, measured with apparatus described in the cited reference by the authors, also confirmed earlier published results by McGinnis (Phys. Rev. v. 97, 93, 1955), [illegible] V. S. Zazulin, and N. S.

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L 11016-65
ACCESSION NR: AP4046438

Kirichev for help with the work." Orig. art. has: 3 figures.

ASSOCIATION: None

SUBMITTED: 10Mar64 ENCL: 00

SUB CODE: NP NR REF SOV: 001 OTHER: 000

Card 3/3

VASIL'YEV, S. S.; ROMANOVSKIY, Ye. A.; TIMUSHEV, G. F.

Properties of the lower excited states of F^{19} and Al^{27} nuclei determined from data on inelastic proton scattering. Izv. AN SSSR. Ser. fiz. 16 no.12:1508-1517 D '62. (MIRA 16:1)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova.

(Fluorine) (Aluminum) (Protons—Scattering)

AKISHIN, A.I.; VASIL'YEV, S.S.; TULINOV, A.F.; TSEPLYAYEV, L.I.

Recording of neutral atoms having an energy of 50 - 500 ev. Izv. AN SSSR. Ser. fiz. 28 no.1:138-140 Ja '64. (MIRA 17:1)

VASIL'YEV, S.S.; SHAVTVALOV, L.Ya.

Radiation from Al^{26m}, S^{31}, Ti^{43}, and Mn^{57}. Zhur. eksp. i teor. fiz. 45 no.5:1385-1386 N '63. (MIRA 17:1)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

VASIL'YEV, S. S.; KHANAAZHAV, L. T.; DZHORDZH, E. T.; SHAVTVALOV, L. Ya.

"The Investigation of βr Spectra of Ne^{19} and Ge^{67} and also the Gamma Radiation of Au^{197m}."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

NIIYaF, MGU
Sci Res Inst Nuclear Physics, Moscow State Univ.

B'SKOVA, K. A.; VASIL'YEV, S. S.; KHAMO-LEYLA, M. A.; SHAVTVALOV, L. Ya.

"Investigation of the Radiations of Radioactive Isotopes Sc^{43}, Cr^{49}, Ga^{66}, Ge^{69}, and Sb^{117}."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

NIIYaF, MGU (Sci Res Inst Nuclear Physics, Moscow State Univ)

CHESUNOV, V.M., assistent; VASIL'YEV, S.S., doktor khim. nauk, prof.

Effect of the structure of polyamides on the kinetics of evaporation of an alcohol-water mixture. Nauch. trudy MTILP 25:142-145 '62. (MIRA 16:8)

1. Kafedry neorganicheskoy i analiticheskoy khimii i fiziki Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

VASIL'YEV, S. S.; MIKHALYEVA, T. N.; CHUPRUNOV, D. L.

"Concerning Excited States of the Nucleus Al^{27} from 3.67 to 4.61 MeV."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

NIIYaF, MGU (Sci Res Inst Nuclear Physics, Moscow State Univ.)

VASIL'YEV, Stepan Sergeyevich; TOLMACHEVA, A.V., red.; VOLKOVA, V.G., tekhn. red.

[Economics of public food service] Ekonomika obshchestvennogo pitaniia. Moskva, Gos.izd-vo torg. lit-ry, 1963. 430 p. (MIRA 16:9)

(Food industry) (Restaurants, lunchrooms, etc.)

VASIL'YEV, S.S.; ROMANOVSKIY, Ye.A.; TIMUSHEV, G.F.

Cross sections of the capture of 6.6 Mev. protons by Cu^{63} and Cu^{65} nuclei. Vest. Mosk. un. Ser.3: Fiz., astron. 17 no.1:94-95 Ja-F '62. (MIRA 15:2)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova.
(Protons) (Copper--Isotopes)

S/048/62/026/012/012/016
B117/B102

AUTHORS: Vasil'yev, S. S., Romanovskiy, Ye. A., and Timushev, G. F.

TITLE: Properties of the lower excited states of F^{19} and Al^{27} nuclei inferred from data on inelastic proton scattering

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 12, 1962, 1508 - 1517

TEXT: Predictions as to the possibilities for obtaining information on nuclear states by investigating inelastic nucleon scattering are here re-examined experimentally in the light of recent model conceptions of direct inelastic interactions between elementary particles. For this purpose protons were accelerated to 6.6 Mev in the 120-cm cyclotron of the NIIYaF MGU and their inelastic scattering on F and Al nuclei was investigated. By evaluating the proton energy spectra recorded at 8 to 9 different angles (from 30 to 150°) information could be obtained on the energy levels of the nuclei investigated. Comparison with results of other authors showed that the level positions can be determined with great accuracy by using targets thick enough to ensure a big enough yield of inelastically

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Properties of the lower ...

scattered particles. This paper was presented on the 12th Annual Conference on Nuclear Spectroscopy in Leningrad from January 26 to February 2, 1962. There are 1 figure, 1 table, and 46 references.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gos. universiteta im. M. V. Lomonosova (Scientific Research Institute of Nuclear Physics of the Moscow State University imeni M. V. Lomonosov)

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S/048/62/026/012/009/016
B117/B102

AUTHORS: Vasil'yev, S. S., and Shavtvalov, L. Ya.

TITLE: Investigation of the radiation of F^{17}, P^{30}, Cl^{33} and Br^{78}

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 12, 1962, 1495 - 1497

TEXT: The β^+-spectra of the above short-lived nuclei were investigated using a magnetic β-spectrometer. P^{30} was obtained from the following reactions: $S^{32}(d,\alpha)P^{30}$, $Al^{27}(\alpha,n)P^{30}$ and $Si^{29}(d,n)P^{30}$. All Fermi plots of its β^+-spectra showed a second component: With P^{30} obtained from $S^{32}(d,\alpha)$ the fundamental spectrum (upper limit 3.24 ± 0.04 Mev) was superimposed by another spectrum having an upper limit of 4.8 ± 0.2 Mev. This could be assigned to Cl^{33} from $S^{32}(d,n)Cl^{33}$. For bombardment with 13.3 Mev deuterons the ratio of the total cross sections of $S^{32}(d,\alpha)P^{30}$ and $S^{32}(d,n)Cl^{33}$ were assumed to be 2.8 ± 0.5. With P^{30} from $Al^{27}(\alpha,n)$ a second non-identi-

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Investigation of the radiation ...

fied spectrum was observed having its upper limit at ~1.3 Mev and its relative intensity <10%. With P^{30} obtained from $Si^{29}(d,n)$ the upper limit of the second spectrum lay at ~1.7 Mev. The formation of this can apparantly be attributed to the use of SiO_2, inducing the reaction $O^{16}(d,n)F^{17}$. The ratio between the cross sections of $O^{16}(d,n)F^{17}$ and $Si^{29}(d,n)P^{30}$ was found to be 2.7±0.5. The averaged upper limit of the β^+-spectrum for P^{30} was E = 3.27±0.05 Mev and the mean half-life 2.5±0.1 min. F^{17} was obtained from the reaction $O^{16}(d,n)F^{17}$ which took place in a $Ti^{44}O_2$ target. The Fermi curve of the β^+-spectrum of F^{17} was linear up to 150 kev. The upper limit of the spectrum lay at 1.73±0.03 Mev. The F^{17} half-life was 70±8 sec. Br^{78} was obtained from the reaction $Se^{77}(d,n)Br^{78}$. Its β^+-spectrum consists of two components with their upper limits at 2.5±0.1 and 1.2±0.2 Mev and their relative intensities 90 and 10. The value 2.5 Mev shows that the upper limit was determined from the mass difference of Br^{78} and Se^{78}. The component with E = 1.2 Mev seems to belong entirely to Br^{78}. β-transitions

Investigation of the radiation ...

with E = 1.2 Mev must take place to the 1310-kev level. The Br^{78} half-life was 6.4±0.4 min. This paper was presented at the 12 Annual Conference on Nuclear Spectroscopy in Leningrad from January 26 to February 2, 1962. There are 5 figures.

Card 3/3

GRIGOR'YAN, G.V., dots.; KISTANOV, Ya.A., dots.; FEFILOV, A.I., dots.; GENKINA, L.S., dots.; VASIL'YEV, S.S., dots.; SEREBRYAKOV, S.V., prof.; DNEPROVSKIY, S.P., prof.; PIROGOV, P.V., dots.; GOGOL', B.I., dots.; SMOTRINA, N.A., dots.; KULIKOV, A.G., dots.; KUZIN, N.I., dots.; AVETISYAN, Ye., red.; MUKHIN, Yu., tekhn. red.

[Economics of Soviet commerce; textbook] Ekonomika sovetskoi torgovli; uchebnik. Moskva, Gospolitizdat, 1962. 527 p. (MIRA 15:6)

1. Moskovskiy institut narodnogo khozyaystva im. G.V.Plekhanova (for Grigor'yan, Kistanov, Fefilov, Genkina, Vasil'yev, Serebryakov, Dneprovskiy, Pirogov, Gogol', Smotrina, Kulikov, Kuzin).
(Russia--Commerce)